



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,177	08/30/2006	Shintaro Kudo	2006_1257A	6042

52349 7590 03/23/2011  
WENDEROTH, LIND & PONACK L.L.P.  
1030 15th Street, N.W.  
Suite 400 East  
Washington, DC 20005-1503

EXAMINER
----------

WILLIAMS, JEFFERY

ART UNIT	PAPER NUMBER
----------	--------------

2482

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

03/23/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com  
coa@wenderoth.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/591,177	KUDO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	JEFFERY WILLIAMS	2482	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

**Claim Rejections - 35 USC § 102**

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless – (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 9931, 7,8,10, and 15-18 rejected under 35 U.S.C. 102(e) as being anticipated by Hagai et al. (US 2004/0247190).

Regarding **claim 1**, Hagai et al. discloses an image decoding device which decodes a coded picture on a block-by-block basis (see Fig. 3 and pg. 2 [0014], the image decoding device comprising:

a decoding unit operable to sequentially decode each block included in the coded picture (see. FIG. 3 #201 and 202);

a storage unit in which each block decoded by the decoding unit is stored;  
a filter unit operable to apply filtering processing to each block decoded by the decoding unit  
(see FIG. 14 #204);

a first executing unit operable to store the decoded block into the storage unit every time the block is decoded by the decoding unit, and to apply the filter processing to the block stored in the storage unit by the filter unit (see FIG. 3 #210 and FIG. 14 #503 and 504);

a second executing unit operable to apply the filtering processing to the decoded block by the filter unit, every time the block is decoded by the decoding unit (see FIG. 3 #210 and FIG. 14 #503 and 504) ; and

a switch control unit operable to switch between an operation performed by the first executing unit and an operation performed by the second executing unit (see FIG. 14 #1404).

Hagai explains on pg. 10, col. 2, lines 41-49, that the switch # 1404 is switched on and off depending on whether or not the decoded image will be used as a reference picture for the decoding of the next image. If the switch (#1404) is switched on, the decoded picture is stored in picture memory (#204). If the switch (#1404) is switched off, the decoded image is not stored in the picture memory (#204). Therefore, the switch (#1404) can be incorporated into the embodiment of FIG. 3, to chose whether or not the decoded image will be stored into the picture memory (#204), depending on a plurality of operation methods, target prediction accuracy or power processing load (see page 11 col. 1, [0087]). Hagai further discloses that pixel interpolating units (#403 and 404) in FIG. 8 may be replaced with a single interpolating unit (see pg. 11, col. 1, [0087]).

Regarding **claim 7**, Hagai discloses the image decoding device according to claim 1, wherein the switch control unit is operable to switch between the operation performed by the first executing unit and the operation performed by the second executing unit, depending on a type of a coded signal including the coded pictures (see pg.4 col. 1, [0047] lines 62-65).

Regarding **claim 8**, Hagai et al. discloses the image decoding device according to claim 7,

wherein the switch control unit (see pg. 6 col. 2, [0061]) is operable to:

prohibit the operation performed by the first executing unit

and permit the operation performed by the second executing unit, when a determination is made, based on the type of the coded signal, that the blocks need to be decoded continuously from a block positioned at an edge of the picture (see pg. 6 col. 2, [0061]); and

prohibit the operation performed by the second executing unit and permit the operation performed by the first executing unit, when the determination is not able to be performed (see pg. 6 col. 2, [0061]).

Regarding **claim 10**, Hagai et al. discloses an image encoding device which codes a picture on a block-by-block basis (see Fig. 2, IMG. and pg. 1 col. 2 lines 8-12), the image encoding device comprising:

a coding unit operable to sequentially code each block included in the picture (see FIG. 2 #102 and 103);

a decoding unit operable to sequentially decode the coded block, every time the block is coded by the coding unit (#104);

a storage unit in which each block decoded by the decoding unit is stored (#106);

a filter unit operable to apply filtering processing to each block decoded by the decoding unit (#110);

a first executing unit operable to store the decoded block into the storage unit every time the block is decoded by the decoding unit, and to apply the filtering processing to the block stored in the storage unit, by the filter unit (see FIG. 1 #110) ;

a second executing unit operable to apply the filtering processing to the decoded block by the filter unit, every time the block is decoded by the decoding unit (see FIG. 1 #110); and

a switch control unit operable to switch between an operation performed by the first executing unit and an operation performed by the second executing unit (see FIG. 14 #1404).

Hagai explains on pg. 10, col. 2, lines 41-49, that the switch # 1404 is switched on and off depending on whether or not the decoded image will be used as a reference picture for the decoding of the next image. If the switch (#1404) is switched on, the decoded picture is stored in picture memory (#204). If the switch (#1404) is switched off, the decoded image is not stored in the picture memory (#204). Therefore, the switch (#1404) can be incorporated into the embodiment of FIG. 2, to chose whether or not the

Art Unit: 2482

decoded image will be stored into the picture memory (#204), depending on a plurality of operation methods, target prediction accuracy or power processing load (see page 11 col. 1, [0087]). Hagai further discloses that pixel interpolating units (#403 and 404) in FIG. 8 may be replaced with a single interpolating unit (see pg. 11, col. 1, [0087]).

Regarding **claim 15**, Hagai et al. discloses the image encoding device according to claim 10, wherein the switch control unit is operable to switch between the operation performed by the first executing unit and the operation performed by the second executing unit, depending on a method of coding performed by the coding unit (see pg.4 col. 1, [0044] lines 66-69).

Regarding **claim 16**, Hagai et al. discloses the image encoding device according to claim 15, wherein the switch control unit is operable to:

prohibit the operation performed by the first executing unit  
and permit the operation performed by the second executing unit, when a determination is made, depending on the method of coding, that the blocks need to be continuously decoded from a block positioned at an edge of the picture(see pg. 6 col. 2, [0061]); and

prohibit the operation performed by the second executing unit and permit the operation performed by the first executing unit, when the determination is not able to be performed. (see pg. 6 col. 2, [0061], the pixel interpolation method is chosen based upon edge information ).

Although the above disclosure pertains to an image decoding device, a person with ordinary skill in the art at the time of the invention could implement the above disclosure in an encoder.

Regarding **claim 17**, the limitations of claim 17 is rejected in the analysis of claim 1, and claim 17 is rejected on that basis.

Regarding **claim 18**, the limitations of claim 18 is rejected in the analysis of claim 10, and claim 18 is rejected on that basis.

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 9, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagai et al. in view of Wenger (FMO 101, JVT-D063).

Regarding **claim 2**, Hagai et. al discloses the image decoding device according to claim 1, the switch control unit, and the two executing units.

Hagai is silent about switching between filter executing units depending on the order of the blocks to be sequentially decoded by the decoding unit.

Wenger from the same or similar fields of endeavor discloses switching between decoding methods depending on the order of the blocks to be decoded by the decoding unit (see pgs. 4-5, section 4.1 Interactive Video Example). It would have been obvious to one of ordinary skill in art at the time of the invention to enable the switching between the two executing units, disclosed in the present invention, to be determined by the order of the macroblocks, as disclosed



Art Unit: 2482

by Wenger, in order to restrain the decrease of processing speed, even if the order of decoding blocks is changed.

Regarding **claim 3**, the limitations of claim 3 are rejected in the analysis of claim 2, and claim 3 is rejected on that basis.

Regarding **claim 9**, Hagai et al. discloses the image decoding device according to claim 1,

and the switch control unit (see pg. 6 col. 2, [0061]) that prohibits the operation performed by the first executing unit and permit the operation performed by the second executing unit (see pg. 6 col. 2, [0061]); and

prohibits the operation performed by the second executing unit and permit the operation performed by the first executing unit (see pg. 6 col. 2, [0061]).

Hagai is silent about obtaining an external signal which indicates whether or not the blocks need to be decoded continuously from a block positioned at an edge of the picture.

Wenger from the same or similar fields of endeavor discloses obtaining an external signal which indicates whether or not the blocks need to be decoded continuously from a block positioned at an edge of the picture (see pgs. 4-5 section 4.1 Interactive Video example). Wenger discloses the decoding order of the macroblocks is determined by information in the slice header. It would have been obvious to one of ordinary skill in the art at the time of the invention to make the switch control unit operable to

obtain an external signal which indicates whether or not the blocks need to be decoded continuously from a block positioned at an edge of the picture;

prohibit the operation performed by the first executing unit and permit the operation performed by the second executing unit, when the external signal indicates that the blocks need to be decoded continuously; and

prohibit the operation performed by the second executing unit and permit the operation performed by the first executing unit, when the external signal indicates that the blocks should not be decoded continuously in order to restrain the decrease of processing speed, even if the order of decoding blocks is changed.

Regarding **claim 11**, the limitations of claim 11 are rejected in the analysis of claim 2, and claim 11 is rejected on that basis.

Regarding **claim 12**, the limitations of claim 12 are rejected in the analysis of claim 3, and claim 12 is rejected on that basis.

Claims 4,5, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagai et al. in view of Pun et al. (US 2004/0008787).

Regarding **claim 4**, Hagai et al. discloses the image decoding device according to claim 1 and the switch control unit.

Hagai is silent about switching between the operation performed by the first executing unit and the operation performed by the second executing unit, depending on the number of the blocks to be decoded by the decoding unit within a predetermined time period. Pun et al. from the same or similar fields of endeavor discloses switching between the operation performed by the first executing unit and the operation performed

Art Unit: 2482

by the second executing unit, depending on the number of the blocks to be decoded by the decoding unit within a predetermined time period (see pg. 9, Ins. 10-21 and the last paragraph). It would have been obvious to one of ordinary skill in art at the time of the invention to enable the switch control unit to be operable to switch between the two executing units, disclosed in the present invention, to be determined by the number of blocks to be decoded by the decoding unit within a predetermined time period, as disclosed by Pun et al, in order to restrain the decrease of processing speed.

Regarding **claim 5**, the limitations of claim 5 are rejected in the analysis of claim 4, and claim 5 is rejected on that basis.

Regarding **claim 13**, the limitations of claim 13 are rejected in the analysis of claim 4, and claim 13 is rejected on that basis.

Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagai et al. in view of Wenger as applied to claim 2 above, and further in view of List (Adaptive Deblocking Filter, IEEE) .

Regarding **claim 6**, Hagai et. al in view of Wenger discloses the image decoding device according to claim 2, the switch control unit, and applying filtering processing when the order of the blocks to be sequentially decoded by the decoding unit is not a regular order of decoding the blocks continuously from a block positioned at an edge of the picture..

Hagai et. al in view of Wenger is silent about switching between the operation performed by said first executing unit and the operation performed by said second executing unit, based on filter information.

List from the same or similar fields of endeavor discloses choosing different filtering operations, based on filter information which indicates a portion that is in the block and is to be applied with the filtering processing (see Table I, and sections A,B, and C). It would have been obvious to one of ordinary skill in art at the time of the invention to enable the switching between the two executing units, disclosed by Hagai in view of Wnger, to be determined by the filter information, as disclosed by List, in order to restrain the decrease of processing speed, even if the order of decoding blocks is changed.

Regarding **claim 14**, the limitations of claim 14 are rejected in the analysis of claim 6, and claim14 is rejected on that basis.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagai et al. in view of Pelc (US 2006/0008013).

Regarding **claim 19**, Hagai et. al discloses all the limitations contained in claim 19, which are analyzed in the analysis of claim 1 with the exception of an integrated circuit which decodes a coded picture on a block-by-clock basis.

Pelc et al. from the same or similar fields of endeavor discloses an integrated circuit which decodes a coded picture on a block-by-clock basis (see [0024], [0026] and [0036]). The "system on a chip" disclosed by Pelc et. al also contains many of the same components contained in the decoding device disclosed by Hagai, including a storage unit in which each block decoded

Art Unit: 2482

by the decoding unit is stored (see [0036]), and a filter unit operable to apply filtering processing to each block decoded by the decoding unit (see [0026]). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the decoding device disclosed by Hagai into an integrated circuit, as disclosed by Pelc et. al, to reduce the computational load on the main processing unit.

Regarding **claim 20**, the limitations of claim 20 are rejected in the analysis of claim 19, and claim 20 is rejected on that basis. In addition, Pelc et al. discloses the integrated circuit containing the coding unit operable to sequentially code each block included in the picture (see pg. 2, [0025]).

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Andrews et al. (US 2001/0020906)
- Hoshi (US 2006/0062309)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFERY WILLIAMS whose telephone number is (571)270-7579. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571)272-7509. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/  
Supervisory Patent Examiner, Art Unit 2482

/JEFFERY WILLIAMS/  
Examiner, Art Unit 2482

Application/Control Number: 10/591,177  
Art Unit: 2482

Page 14